FUTURE PAST
VIRTUAL REALITY DIGS UP HISTORY

Domain YOUR FAVOURITE LOCAL PROPERTY GUIDE INSIDE
VIRTUAL DIGGING

BY SCOTT BEVAN

I'm virtually standing near the corner of Hunter and Steel streets, on the site of the KFC restaurant, before I sink into the earth, and into another world.

Like a surrealist scuba diver, I'm floating through grids, the colours of their outlines changing as I descend.

More than being submerged in somewhere psychedelic, I'm travelling through the ages, through layers of history; the 20th century, down through the colonial era and into the time before the British arrived here, when the Awabakal people lived and traded with other Aboriginal groups on this land for generations. Before I know it, I'm back more than 6000 years.

Suddenly a voice from the present day drifts into this virtual world.

"Can you see that object over to your left?" asks Dr Ann Hardy.

There it is, suspended amid a cluster of blue grids, like some sunken treasure. A small stone.

Dr Hardy, the coordinator of the University of Newcastle's GLAMx Living Histories Digitisation Lab, urges me to use the control grips in my hands to reach out and touch the stone. I can turn the stone and look at it from different angles, as if I'm holding it, and I can use a magnifying glass to study it.

A digital panel has popped up, and it tells me, in an arcane language understood by archaeologists, where I am: "B3 Spit 20". And it indicates what I'm looking at: an "amorphous stone artefact".

"Significance: Cultural," the table declares.

After examining the stone, I look towards the surface and ascend through the grids until I'm back in 2017. I slip off the 3-D headset I've been wearing and immediately return to the real world.

I'm actually standing before a large screen in a room in the University of Newcastle's Auchmuty Library.

But I've just been given a peek into the future, and into the ancient past, thanks to an eye-opening, head-spinning initiative called the Deep Time project.

THIS project was born in a race against time.

Following the demolition of the former Palais Royale nightclub in 2008, and before the construction of Australia's largest KFC restaurant on the Newcastle West site, an archaeological excavation was undertaken.

In the ground beneath where customers can now grab a fast fix of fried chicken is an extraordinary trove of heritage items.

The excavation report declared the survey "revealed an exceptional culturally and scientifically significant site," uncovering 5534 Aboriginal artefacts dating back about 6700 years.

Yet that report's findings only saw the light in 2011, about a year after the KFC building was constructed. The past had been effectively sealed by the new development, and that broke open an outcry.

Giovanni Di Gravio, the University of Newcastle's archivist and chairman of the historical research group Coal River Working Party, was reported as saying at the time, "Aboriginal archaeology is not given any importance, which I find amazing. This material is as significant as anything you would find in Europe."

All the researchers and the local Aboriginal communities had what had been excavated and salvaged. Yet that was more than enough to cause dismay, as it highlighted what may have been lost.

"We only had a chance to get a little bit, it's one trench," says Dr Amir Moghadam, the university's conservator.

The trench that provided thousands of artefacts was only about 16 metres long, three metres wide and little more than two metres deep.

"It's only a part of that whole place," Dr Moghadam says. "Imagine how much we could have excavated and salvaged if we could have got access to the bigger site."

"But we understand there are other interests, and we need to keep up with that." What was excavated is significant, with the artefacts ranging from small stone tools to campfire remnants.

On this site, different Aboriginal groups used to trade, so stones and implements would be brought from far and wide.

"It's like a Bunnings of the time," Dr Moghadam says of the site. "It's a tool shop."

For researchers, the sum of artefacts is more than a tool shop; it is a library, a museum, a science laboratory, and a grand repository of knowledge and learning.
The more recent layers close to the surface also held important clues to life in early Newcastle. Colonial artefacts were excavated.

A government farm and cottage were established on this site about 1810. The missionary and pioneer Reverend Lancelot Threlkeld and his family lived around this area in 1825, and it was while here that he began recording and studying local Aboriginal languages. Threlkeld’s studies, and his connection with the area’s Aboriginal people, only add to the significance of the site, according to Ann Hardy.

“There’s that real coming together, and of the language being recorded,” she says.

So with the site’s layers of importance, and with boxes filled with Aboriginal and colonial artefacts, a group of archaeologists and historians at the university considered this too important to be kept out of sight and mind of researchers and the community.

The Deep Time project began taking shape. The group resolved to work towards marrying the ancient finds with state-of-the-art digital tools.

If the site could not have been saved in reality for further research, then the trench and its contents would be virtually preserved. The plan was to scan each artefact and place that image in a digital trench, exactly where the original was found.

In that way, as Amir Moghadam says, everyone could “do some digital digging”.

Dr Hardy and Di Gravio argue that it was one thing to have thousands of items in plastic bags, marked with the coordinates of where each of them was located, and then grouped together according to what sort of artefact it was. But that didn’t tell enough of the story about the site.

“Even though we knew the individual artefact, where it came from in the trench, it didn’t come in any order,” explains Ann Hardy. “It wasn’t until Gionni applied his archival thinking and got all the artefacts in some order, that we could find them again.”

Being an archivist, I wanted that original order recorded,” Di Gravio adds. “The spit gave you the depth, and whether they were A, B or C gave you the coordinates of the location.

“From an archivist’s point of view, the kind of thing it is is not as important as the context of how it was located. The layer of how these records come to you tells a story, and you have to know where they were found.”

So the researchers had the artefacts. They had the coordinates. And they had the idea for the digitally recreated site. They just needed the technological know-how to turn their idea into a virtual reality.

They found what and who they were looking for on campus, with the university’s IT Innovation team. Earlier this year, the technology specialists spent about 12 weeks crafting a digital version of the excavation site.

“They were able to create the three-dimensional dig for us,” says Di Gravio.

The IT Innovation team also sourced the equipment to scan the artefacts. But the scanning has proven to be a time-devouring process.

TUCKED away in the Auchmuty Library is a door that wears an impressive title: GLAMx Artefact Conservation Atelier.

Yet behind that door is a small, windowless room. This is where pieces of the past are converted into something that can be transported into the future. It is the 3-D digitisation lab, and the heart of the Deep Time project.

On the far wall are shelves stacked with storage boxes holding the artefacts from the KFC site. Just near the door is a lightbox containing what looks like a Lazy Susan. Sitting on that wooden plate is a scanner, which, because of its shape and appearance, is referred to as “the iron”.

Here Ann Hardy scans the artefacts, one by one. It is a laborious process.

Dr Hardy gives a demonstration. The artefact is placed on the rotating plate, which the historian slowly turns, while she guides the scanner over the stone.

“It’s almost like spray-painting,” she explains.

Hundreds of frames of images are transferred to a computer screen. Those images are then cleaned up and aligned, like assembling a puzzle, to create the 3-D model. The process takes about 40 minutes for each item. Using the archaeologists’ coordinates, the digital version of the artefact is then uploaded into the virtual trench and placed exactly where the original was found.

Yet these pieces are few and far between in the virtual site; so far, only about 30 of the artefacts have been digitised. Which means there are thousands to go.

“It can be quite overwhelming, but it’s an example of the longevity of this project,” says Dr Hardy.

The historian needs not just more time but more volunteers to help with the digitising. About 10 students and volunteers have been working in the lab, and more are trickling in.

Jason Connor has been helping out to not just develop new skills but to strengthen the bonds to his culture.

Connor is a mature-age student. He left his job as a manager at a supermarket in Muswellbrook to enter the university’s Yapug pathways program, which helps Aboriginal and Torres Strait Islander people develop the skills to study for a degree.

Connor is planning to study Environmental Science.

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He decided to become involved in the Deep Time project to honour his maternal grandfather and family. They are Wiradjuri people. As he holds the scanner over an artefact, this is far more than a physical act to Jason Connor.

"It's such a spiritual experience to be connected to something that happened so many years ago, and it strengthens your own culture," Connor explains. "You feel more connected."

"To get a connection, to feel the heritage, the mystery, the emotion, to see the value of our culture. I just wanted to preserve the heritage, because heritage is sacred. We can lose it, or we can learn from it."

THIS project, says its creators, is an Australian first. Indeed, they are unaware of any other archaeological dig of this type in the world that has been digitally recreated.

They emphasise the Deep Time project is the result of a range of skills and knowledge. The "GLAM" in the GLAMx Living Histories Digitisation Lab, they point out, stands for Galleries, Libraries, Archives and Museums, and each of those disciplines has been involved in some way. The project has been driven by uniting the cutting edge and time-honoured skills.

"It's a beautiful marriage of the arts and sciences," says Gianni Di Gravio.

For instance, with artefacts that are too small to scan, pencil and paper have been employed to preserve their image.

Emma Heath, who is studying for a Bachelor of Natural History Illustration at the university, has done about 300 drawings, finely and fastidiously sketching the front, side and back of each artefact.

"It's good to have these stone tools, and not in a box and forgotten about," Heath says.

But the knowledge that is crucial to this project is that of the traditional owners.

"The ancestors created these things, this is our respect to them," Di Gravio says. "We really want to invite the communities in."

The project creators recently held a demonstration for members of local Indigenous communities, including representatives of the Awabakal Local Aboriginal Land Council. Weekender was also invited.

In the digitisation lab, small pieces of enormous cultural heritage were taken out of the storage boxes and cradled by the researchers and visitors.

"You can almost feel where your thumb should go," said Amir Moghadam, as a crafted stone was handed to the land council's culture and heritage officer, Peter Townsend. "You can imagine who held it."

Townsend intently studied the stone and rubbed it against the palm of his hand, determining if it may have been a grinder of some sort.

"You don't find this around here," he murmured. "I haven't seen something like this before. My guess is it has come from out west somewhere."

To help answer those sort of questions, a geologist has volunteered to study the stones and track their source. That will indicate which other groups the Awabakal were trading with.

The visitors moved from the digitisation lab to the larger adjoining room, to stand before the screen, put on the headset and delve deep into the past.

"Unbelievable," said Peter Townsend of the virtual reality experience. "It's a modern outlook, and it does bring to life the cultural heritage in Newcastle."

Having worn the headset and studied some of the virtual stone tools on the screen, Awabakal Local Aboriginal Land Council Chief Executive Robert Russell said this project helped build a clearer picture of a people who were "civilised and exceptionally good traders."

The researchers say as more knowledge comes to light, they will learn more about individual artefacts. But the project will also fill in gaps on the broader picture, such as trading patterns of the Aboriginal groups and their diet.

While the project is yet to be officially launched, Amir Moghadam says the plan is to make "the cultural trench digitally available, so that anyone in the future can get to this digitised site."

"By linking this to other information and technology, we can put this puzzle together, to find out about things that haven't been talked about, such as politics and governance [among Indigenous peoples]," he says.

So more than opening our eyes to a new world, this project could cast fresh light on an ancient culture.

"Virtual reality, and this digital work, is a great way of interpreting Indigenous heritage, and people respecting and learning," says Ann Hardy.

"I see it as an opportunity for all Australians to learn about Indigenous culture. So we do build more respect, and people acknowledge how rich and ancient the culture is."

Having scanned an artefact, Wiradjuri man Jason Connor concludes, "everyone can learn from this."

"There's so much knowledge to be found in there."